



Estimation of ozone dry deposition over Europe for the period 2071-2100

Eszter Komjáthy (1), Györgyi Gelybó (1), István László Lagzi (2), and Róbert Mészáros (1)

(1) ELTE-TTK, Institute of Geography and Earth Sciences, Meteorology, Budapest, Hungary (komjathyeszter@gmail.com),

(2) Northwestern University, Department of Chemical and Biological Engineering, Evanston, Illinois

Ozone in the lower troposphere is a phytotoxic air pollutant which can cause injury to plant tissues, causing reduction in plant growth and productivity. In the last decades, several investigations have been carried out for the purpose to estimate ozone load over different surface types. At the same time, the changes of atmospheric variables as well as surface/vegetation parameters due to the global climate change could also strongly modify both temporal and spatial variations of ozone load over Europe. In this study, the possible effects of climate change on ozone deposition are analyzed. Using a sophisticated deposition model, ozone deposition was estimated on a regular grid over Europe for the period 2071–2100. Our aim is to determine the uncertainties and the possible degree of change in ozone deposition velocity as an important predictor of total ozone load using climate data from multiple climate models and runs. For these model calculations, results of the PRUDENCE (Predicting of Regional Scenarios and Uncertainties for Defining European Climate Change Risks and Effects) climate prediction project were used. As a first step, seasonal variations of ozone deposition over different vegetation types in case of different climate scenarios are presented in this study. Besides model calculations, in the frame of a sensitivity analyses, the effects of surface/vegetation parameters (e.g. leaf area index or stomatal resistance) on ozone deposition under a modified climate regime have also been analyzed.